DOCUMENT RESUME

ED 446 509 HE 033 321

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TITLE	The Non-Linear Transfer Student: The Case of Transfer, Returning Transfer, Re-Transfer, and Co-Enrollment. AIR 2000 Annual Forum Paper.
PUB DATE	2000-05-22
NOTE	23p.; Paper presented at the Annual Forum of the Association for Institutional Research (40th, Cincinnati, OH, May 21-24, 2000).
PUB TYPE	Reports - Research (143) -- Speeches/Meeting Papers (150)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	*College Transfer Students; Community Colleges; Enrollment Trends; Higher Education; Transfer Rates (College)
IDENTIFIERS	Maricopa County Community College AZ

ABSTRACT

This paper presents the findings of a longitudinal study into the nonlinear transfer behaviors of students beginning higher education at the Maricopa County Community College, Arizona, and transferring to one of Arizona's three universities. The transfer patterns of recent high school graduates entering the community college in fall 1994 were tracked for 5 years, focusing on: traditional transfers; non-transfers; associate degree recipients; baccalaureate degree recipients; returning transfers; re-transfers; and co-enrolled. A total of 1,300, or 24.6 percent, of the 5,285 students in the cohort transferred to one of the state's universities during the 5 years of the study. Data analysis indicated that the success of the cohort based on traditional measures of persistence, graduation, and transfer to the university was 44.7 percent, but after transfer, the success rate dropped to 35 percent. The incidence of non-linear transfer behavior, such as returning transfer, re-transfer, and co-enrollment was small but diverse. Approximately 23.5 percent of the students transferring to the university co-enrolled with the community college. The majority of co-enrollment occurred during the first semester at the university. (Contains 15 references.) (SM)

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ED 446 509

THE NON-LINEAR TRANSFER STUDENT: THE CASE OF TRANSFER, RETURNING TRANSFER, RE-TRANSFER, AND CO-ENROLLMENT

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Paper presented at the 40th Annual Forum of the Association for Institutional Research
Cincinnati, Ohio
May 22, 2000

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ABSTRACT

The paper presents the findings of a longitudinal study into the non-linear transfer behaviors of students beginning higher education at the Maricopa County Community College District and transferring to one of Arizona's three universities. The transfer patterns of recent high school graduates entering the community college in Fall 1994 were tracked for five years, focusing on transfer, returning transfer, re-transfer, and co-enrollment of students. 1,300 or 24.6% of the 5,285 students in the cohort transferred to one of the state's universities during the five years of the study. The success of the cohort based on traditional measures of persistence, graduation, and transfer to the university was 44.7%; but after transfer the success rate dropped to 35%. More needs to be known about the goals of community college students before judgment can be passed on these success rates. It may be that traditional measures of success need to be refined or redefined altogether.

The incidence of non-linear transfer behavior, such as returning transfer, re-transfer, and co-enrollment was small but diverse. Most notable was the finding that 23.5% of the students transferring to the university co-enrolled with the community college. The majority of the co-enrollment occurred during the first semester at the university. This finding underscores the need for two-year and the four-year institutions located in the same geographic region to establish programs to support these students during the transition semester.

THE NON-LINEAR TRANSFER STUDENT: THE CASE OF TRANSFER, RETURNING TRANSFER, RE-TRANSFER, AND CO-ENROLLMENT

Most urban communities in the United States have two different but complementary post-secondary education systems serving the citizens living within the state; namely, the four-year public university and the two-year local community college. The builders of these systems envisioned each system serving populations with differing needs. In the case of the community college, the student clientele is broad, including not only students planning on earning a four-year degree, but also students seeking occupational education, continuing education, work-skill upgrade, general education, and adult basic and developmental education. The four-year public institution serves the baccalaureate-bound students, as well as the graduate student. Public four-year institutions also perform research and public service missions.

The builders of state-supported post-secondary systems viewed the "two-plus-two" pathway to baccalaureate completion as the logical intersect between the community college and the university. The local community college usually offers a closer, smaller, less expensive alternative to the baccalaureate-bound student during the first two years than the larger four-year public university. However, the presence of both systems in the same market results in an unusual array of student transfer behavior. The builders of these systems never contemplated the non-linear transfer behaviors of these students.

NON-LINEAR TRANSFER BEHAVIORS

Some of the non-linear transfer behaviors identified by researchers are reverse transfer (transferring from a four-year to a two-year institution), returning transfer (a

community college student that transfers to a university and returns to the community college), re-transfer (a returning transfer who transfers again to the university), lateral transfer (transferring to another 2-year institution), and co-enrollment, e.g., simultaneous enrollment with another 2 year or 4 year institution (de los Santos & Wright, 1990; Palmer & Eaton, 1991). Mitchell and Grafton (1985) found that 26 percent of the students at Los Rios Community College were lateral transfers and 20 percent were reverse transfers. Among a group of students still enrolled at a California community college four years after initial entry, 28 percent had already transferred to a four-year institution, half of which were concurrently enrolled in both institutions (Fryer & Turner, 1990).

The annual study by the State University of New York documented an increasing number of students exhibiting non-linear transfer behaviors (e.g., SUNY report number 6-92 and 6-93). Lucas (1994) followed students entering Harper College from 1982 through 1992 and found the numbers of reverse transfer students increasing. Studies of reverse transfers frequently report large proportions of students who already have obtained a baccalaureate degree (ranging from 17 percent to over 40 percent) and are enrolled primarily for job upgrade or personal interest (Hogan, 1986; Mitchell & Grafton, 1985; Slark, 1982). In a study of reverse transfers attending Illinois community colleges, Kajstura and Keim (1992) reported that 29 percent of the reverse transfers were college graduates. When the California Community Colleges imposed a $50 per unit "differential fee" on students already holding a bachelor's degree, enrollment decreased by approximately 60,000.

In a study between 1980 and 1988, Bers (1992) found that 1,678 students attending Oakton Community College had received a bachelor's degree. Of these, 612 students had started higher education at Oakton. Kajstura and Keim (1992) have attempted to illuminate the demographics, academic background, educational goal, and reasons for reverse transfer in an Illinois community college. However, this study only included 525 students. Most researchers conclude that the primary reasons for leaving four-year institutions to attend a two-year institution include location, cost, ability to work while attending school, academic indecision, academic difficulty, and availability of specific programs (Benedict, 1987; Hogan, 1986; Kajstura & Keim, 1992; Mitchell & Grafton, 1985).

In a longitudinal study covering seven years at the Maricopa Community Colleges, Gebel (1993) found that a cohort of transfer students took longer to earn a baccalaureate degree than the native students who took an average of five years to graduate. Twenty percent of the transfer cohort graduated in five years; over 50 percent, in 7 years with over 20% still enrolled. The transfer students who did not graduate had higher reverse transfer rates back to the community college, skipped more semesters, and had higher part-time enrollments. Gebel also found that 40% of the transfer students co-enrolled at some point. Eighteen percent of the transfer students earned an associate degree while at the community college.

IMPACT OF NON-LINEAR TRANSFER BEHAVIOR

Grubb (1991) emphasizes the importance of non-linear transfer in shaping the character of community college student populations. The lack of consistency and cohesiveness in student populations may pose a considerable obstacle for community

colleges and public universities in providing a structured general education core curriculum designed to enhance student flow to degree completion (Palmer, 1990; Richardson & Bender, 1987). Grubb (1991) postulates that non-linear transfer patterns decrease the probability of degree completion by "weakening the 'lock-step' progression through post-secondary education" (p. 213). However, to the "savvy" student, the opportunity to pursue a non-linear path to a four-year degree may be a manifestation of a consumer maximizing consumption in the market place (in terms of cost, convenience, or some other value important to the consumer). Increasing our understanding of the non-linear transfer student is essential if community colleges and public universities are to maintain standards and train an educated workforce for the new century.

RESEARCH QUESTIONS

Most of the previous research into the enrollment behaviors of transfer students documented the incidence of non-linear transfer, but only a few of the studies followed a cohort of students over time (e.g., Gebel 1993, Lucas 1994, and Adelman 1998) and only Kajstura and Keim (1992) documented the reasons for the non-linear behaviors. The creation of a new statewide student data warehouse in Arizona provided an opportunity to replicate the few longitudinal studies by following a cohort of students entering the Maricopa County Community College District, and transferring to one of Arizona's public universities (Arizona State University, the University of Arizona, and Northern Arizona University). This study documents the frequency of non-linear transfer behaviors (1) extending the studies of Gebel (1993), Lucas (1994) and Adelman (1998), (2) considers time to degree and the economic benefits of lowering the cost of the

baccalaureate degree, and (3) contributes to an understanding of how non-linear behaviors may impact institutional support programs.

METHODOLOGY

The enrollments of recent high school graduates at the Maricopa Community Colleges in Fall 1994 were followed for five years and grouped as (1) traditional transfers, (2) non-transfers, (3) associate degree recipients, (4) baccalaureate degree recipients, (5) returning transfers, (6) re-transfers, and (7) co-enrolled. Since community colleges enroll students from varied academic backgrounds and educational goals, the authors limited the study population to ages 17 to 19, a high school graduate in 1994, and no previous Maricopa earned hours. This resulted in a cohesive study population of 5,285 students.

The demographics of the study cohort are consistent with the high school graduate populations Maricopa serves. Slightly more than half were female (51%); almost all (92.9%) were Arizona Residents, and 25.2% were minority (Hispanic being the largest group at 15.6%). See Attachment 1 for a complete summary of the demographic characteristics of the study population.

The creation of a statewide student tracking data warehouse provides a stable data source to address the research questions. The Arizona State System for Information on Student Transfer (ASSIST) was created to provide Arizona's ten community college districts data to assess the effectiveness of the State's transfer paths, and provide community colleges information for completing the IPEDS Graduation Rate Survey. The community college data in ASSIST begins in Fall 1993; university data begins in Fall 1994. Student records are matched and assigned a unique ASSIST identification

number in a relational database. Implemented in January 2000, ASSIST contains over 700,000 student records with more than 125,000 matched records. Plans are currently underway to add the community college course data into ASSIST (university course work has already been added). In the near future, ASSIST will be able to address how courses taken by students engaging in non-linear transfer behavior impacts the academic program of study.

To ensure ASSIST does not violate a student's FERPA rights, a security plan was adopted based on the pattern NCES uses to make restricted data available to researchers. All the governing boards in Arizona adopted a joint resolution to legitimize the collection of ASSIST data and ensure the database does not violate a student's privacy rights. Further, the version of the database accessed by researchers only includes former students of the institution. However, since the database does contain the enrollment records of the former students at all ASSIST institutions, personally identifying data elements, such as student identification number, name, birth date, are removed.

FINDINGS

Enrollment Patterns at the Community College. The enrollment findings at the community college were limited to four years because data for the fifth year has not been loaded into ASSIST. From Fall 1994 to Spring 1998, 1,547 students of the 5,285 study population (or 29.3%) enrolled for one year or less at Maricopa; 763 (or 14.4%) for one semester. Another 969 students (or 18.3%) enrolled for two years; 1,133 (or 21.4%) enrolled for three years; and 1,636 (or 31%) for four years. During the four years, 3,677 (or 69.6%) enrolled fulltime for at least one semester.

Of the 4,522 students who enrolled for two or more semesters at Marciopa, 1,910 (or 42.2%) skipped one or more semesters during the four years of tracking at the community college. 1,231 (or 27.2%) attended more than one community college, and 344 (or 6.5%) co-enrolled with another community college. However, the overwhelming majority of the 344 co-enrolled students did so for one semester (266 students or 77.3%). 56 students (16.3%) co-enrolled for two semesters; 19 students (5.5%) co-enrolled for three semesters; and 3 students (0.9%) co-enrolled for four semesters.

Of the 5,285 recently graduated high school students, only 302 (or 5.7%) completed an associate degree; 33 of these received more than one associate degree; and 16 received both an associate degree and a certificate. The majority of the associate degrees took three years to earn – 167 or 55.3%. 57 degrees (or 18.9%) were earned in two years, while 78 (or 25.8%) took four years to complete.

At the end of four years of tracking, 861 students (or 16.3%) of the study population were still enrolled at the community college in Spring 1998. 149 (or 2.8%) earned a certificate; and 13 of these received more than one certificate. (See Attachment 1 for a complete list of the findings.)

Enrollment Patterns at the University. ASSIST contains five years of university enrollment data - Fall 1994 through Spring 1999. Over the five years, 1,300 (or 24.6%) of the 5,285 study population transferred to an Arizona public university. The largest group of the 1,300 students transferred during the third year of the study (519 students or 39.9% of the transfers). 88 (or 6.8%) transferred in the first year; 215 (or 16.5%) transferred in the second year; 319 (or 24.5%) in the fourth year; and 159 (or 12.2%) in the fifth year.

174 (or 13.4%) enrolled at a university for only one semester and 535 (or 41.2%) were still enrolled at the end of the study. Of the 1,300 students who transferred, 1,126 (or 86.6%) enrolled for two or more semesters. 132 (or 11.7%) of these students skipped one or more semesters during the five years of the study; and 46 (or 3.5%) attended more than one university. [Compared to the enrollment patterns at the community college, a much smaller number skipped one or more semesters and attended more than one institution at the same level.] During the five years of the study, 934 (71.8%) of the transfer students enrolled fulltime at the university at least one semester.

Of the 1,300 transfer students, 303 (or 5.7% of the original cohort and 23.3% of those who transferred) completed a baccalaureate degree during the study period. The majority of the baccalaureate degrees took three years to complete (154 or 50.8% of the 303 degrees). One student completed a baccalaureate degree after one year of university enrollment. 96 (or 31.7%) degrees were earned after two years of university enrollment; 39 (or 12.9%) after four years, and 13 (or 4.3%) after five.

Of the 1,300 students who transferred, only 100 (or 7.7%) had an associate degree, and 47 (or 3.6%) earned both an associate degree and a baccalaureate degree. (See Attachment 1 for a complete list of the findings.)

Community College and University Co-enrollment. 305 transfer students (or 5.8% of the original cohort and 23.5% of those who transferred) co-enrolled between the community college and the university. The overwhelming majority of the co-enrollment took place for one semester (211 or 69.2%) and the majority of these (107) in the first semester of university enrollment. 67 (or 22%) co-enrolled for two semesters; 20 (or 6.6%) for three semesters; and 7 (or 2.3%) for four or more semesters. The average

number of registered community college hours of the co-enrolled group was 5.7 with a standard deviation of 3.2; the average registered hours at the university was 7.5 with a standard deviation of 3.8. (See Attachment 1 for a complete list of the findings.)

Returning Transfer – Re-transfer. 99 (or 1.9%) of the original 5,285 study population and (or 7.6% of the 1,300 students who transferred) returned to the community college (i.e., returning transfer). 62 (or 62.6%) of these students never returned to the university. However, 33 students (or 33.3% of the returning transfers) did re-transfer back to the university - completing the transfer cycle twice! And 4 of these students (or 12.1%) earned a baccalaureate degree. (See Attachment 1 for a complete list of the findings.)

CONCLUSIONS

Community College Enrollment. This study brings to light the amazing diversity of paths community college students take in higher education – a much more complex process than that faced by students entering directly into the university. In Arizona, first year attrition at the university runs about 25%, not much different than the 29.3% found at the community college. Another interesting finding was the high percent of community college students (42.2%) who survived the first year at the community college who interrupted their education for one or more semesters. After transferring to the university, the comparable percent was 11.7%. This difference may indicate that by the time the student transfers to the university their commitment to pursuing higher education is greater. At the community college, this finding may indicate community college students face greater uncertainty with educational goals, finances, and family issues that could impact the ability to maintain consistent enrollment.

The Maricopa Community Colleges are a tight network of 10 campuses in metropolitan Phoenix. This was reflected in the finding that 27.2% of the study population attended more than one Maricopa College. The rate at which community college students co-enrolled over the four years they were tracked seems quite low – 6.5%. However, the total enrollment at Maricopa is about 217,000. If the total student population is co-enrolling at this rate, the impact of co-enrollment is very large. These enrollment patterns are likely to be reflective of decisions students make for convenience reasons. Within the Maricopa Community Colleges, students tend to enroll in the courses they want, at the time they prefer regardless of the campus offering the course. This type of behavior is very similar to that of a consumer in the market place.

5.7% of the study population completed an associate degree and 81.1% of those took more than two years to earn it. The numbers of associate degrees is not surprising, as the literature has long documented that the numbers of associate degrees has declined. However, the authors found a much smaller rate than Gebel (1993) did at the same institution a few years earlier (18% versus 5.7%). Arizona has addressed this issue by establishing articulation agreements between the community colleges and the universities, such that if an associate degree is earned, the universities award two full years of credit (i.e., two years as a block). The universities cannot require additional lower division general education credit where an associate degree is earned.

This study also revealed that large numbers of students left the community college without earning a degree or transferring to the university. Traditional measures of success for the community college include continuing enrollment, degree attainment, and transfer to a university. 302 students earned an associate degree, 1,300 students

transferred to a university (but 100 of those transferred with an associate degree), and 861 were still enrolled at the end of the study. Therefore, using traditional measures, 2,363 students succeeded (1,300 transfers, 861 still enrolled, 302 degree recipients less 100 who transferred), or 44.7% of the study population. If this rate seems low, it may reflect the diversity of reasons students enter the community college instead of the university. More needs to be known about the 2,922 students who did not succeed by traditional measures within the timeframe of this study. It may be that these students achieved their goal and left satisfied. In a longer study, some of these may return to continue their education.

University Enrollment. 24.6% of the study population transferred to one of Arizona's public universities during the five years of the study. This finding calls attention to the need to broaden the study to other cohorts to document if this transfer rate is the norm. Of those who transferred, 63.2% did so by the end of the third year of the study; 36.8% after three years in post-secondary education. The later group may have lost some of the economic advantages associated with taking the community college path to earn a four-year degree by taking more than three years to transfer. This also raises questions whether the financial aid system is structured to support students who take over 6 to 8 years to earn a baccalaureate degree rather than 4 to 6 years.

Of the original study population only 5.7% (303 students) earned a baccalaureate degree during five years. This number represents 23.3% of those who transferred to the university. Since 535 transfer students were still enrolled at the university at the end of the study, the number could end up as high as 64.4% of those who transferred or 15.9% of the original study population.

Using traditional measures, the success of the community college cohort dropped to 35.1% after transferring to the university (861 students still enrolled at the community college plus 535 still enrolled at the university plus 155 associate degree recipients who did not transfer plus 303 baccalaureate recipients divided by the original study population of 5,285). Again, the authors question whether traditional measures are measuring the true success rate of the cohort. However, regardless of the answer to that question, the 303 students who chose the community college path and graduated with a baccalaureate degree within the five years, did so at a much lower cost than their university peers! But the numbers were few.

Community College/University Co-enrollment. Only 5.8% of the study population co-enrolled during the study, but for students who transferred to the university the number was 23.5%. The findings indicate that many of these students are co-enrolling during the first semester at the university. This behavior is probably associated with transitioning from one institution to another when the two are located in the same metropolitan area. This finding calls attention to the need to establish mechanisms to support students who choose to transition. Traditionally, transfer is viewed as an end of participation in one system and the beginning of participation in another. But in reality, many students choose to spread the transition over one or more semesters.

Returning Transfer/Re-Transfer. 99 students returned to the community college during the study after transferring to the university. While this number was smaller than the authors anticipated based on anecdotal references by administrators, clearly some students do choose to take this path. Little is know about the reasons for returning to the community college. 33 of the returning students re-transferred to the university

completing the transfer cycle twice! This behavior contributes to the complexity of adequately serving the community college student and the notion of "swirling" enrollment patterns (de los Santos and Wright [1990]).

Future Study. This study was an initial attempt to use ASSIST to illuminate the non-linear transfer behaviors of students at the Maricopa Community Colleges and Arizona's universities. To be of broad value, this study should be replicated for other cohorts and extended for 2 – 3 yeras. Gebel (1993) and Adelman (1998) found that the transfer cohorts have to be tracked for at least 7 – 8 years. Also, this study did not allow for analysis of the student's coursework. Developing an understanding of how non-linear transfer patterns impact the student's program of study is important to academic administrators at both the community college and university. The authors plan to explore these issues in the future.

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Attachment 1

Enrollment Patterns for Students Transferring from MCCCD to an Arizona University

Selection Criteria for New Freshmen at MCCCD

High School Graduate in 1994
Age = 17 - 19
Cumulative earned hours at MCCCD = 0

Number Enrolled at MCCCD in Fall 1994:	**5,285**	
Demographic Characteristics:		
Male	2,567	48.6%
Female	2,697	51.0%
Unknown	21	0.4%
Arizona Resident	4,911	92.9%
Non-Resident	374	7.1%
African American	207	3.9%
American Indian	176	3.3%
Asian American	126	2.4%
Hispanic	822	15.6%
White	3,751	71.0%
International	55	1.0%
Unknown	148	2.8%
Enrolled Full-Time (12 or more hours)	3,677	69.6%

Enrollment Patterns at the Community College

CC Enrollment :	**5,285**	
Length of Enrollment (includes non-consecutive enrollment):		
Enrolled for 1 year	1,547	29.3%
Enrolled for 2 years	969	18.3%
Enrolled for 3 years	1,133	21.4%
Enrolled for 4 years	1,636	31.0%
Enrolled for 1 semester only	763	14.4%
Average percent of semesters enrolled full-time	58.3%	
CC Enrollment Characteristics (enrolling two or more semesters):	**4,522**	**85.6%**
Skipped one or more semesters	1,910	42.2%
Attended more than one CC (excluding co-enrollment)	1,231	27.2%
CC Co-Enrollment :	**344**	**6.5%**
Co-enrolled 1 semester	266	77.3%
Co-enrolled 2 semesters	56	16.3%
Co-enrolled 3 semesters	19	5.5%
Co-enrolled 4 semesters	3	0.9%

Enrollment Patterns at the University

UNIV Enrollment :	**1,300**	**24.6%**
Enrolled for 1 semester only	174	13.4%
Still enrolled as of Spring 1999 (no bach degree)	535	41.2%
Average percent of semesters enrolled full-time	71.8%	
Enrolled first semester as new transfer	1,136	87.4%
Enrolled first semester as new freshman	94	7.2%
Enrolled first semester as new non-degree-seeking	70	5.4%
Enrolled at ASU first	995	76.5%
Enrolled at UA first	84	6.5%
Enrolled at NAU first	221	17.0%

UNIV Transfer Characteristics (based on first semester of enrollment):		
Transferred the 1st year (Fa94-Sp95)	88	6.8%
Transferred the 2nd year (Fa95-Sp96)	215	16.5%
Transferred the 3rd year (Fa96-Sp97)	519	39.9%
Transferred the 4th year (Fa97-Sp98)	319	24.5%
Transferred the 5th year (Fa98-Sp99)	159	12.2%

UNIV Enrollment Characteristics (enrolling two or more semesters):	**1,126**	**21.3%**
Skipped 1 or more semesters	132	11.7%
Attended more than one university	46	4.1%

Non-Linear Enrollment Patterns

CC/UNIV Co-Enrollment :	**305**	**5.8%**
Co-enrolled 1 semester	211	69.2%
Co-enrolled 2 semesters	67	22.0%
Co-enrolled 3 semesters	20	6.6%
Co-enrolled 4 or more semesters	7	2.3%
Average number of CC registered hours	5.7	
Standard deviation	3.2	
Minimum hours	1.0	
Maximum hours	18.0	
Average number of UNIV registered hours	7.5	
Standard deviation	3.8	
Minimum hours	1.0	
Maximum hours	20.0	
Returning Transfers :	**99**	**1.9%**
Returned to CC but did not complete associate degree	96	97.0%
Returned to CC and completed associate degree	3	3.0%
Re-Transfers (Re-entered UNIV after returning to CC):	**37**	**0.7%**
Re-enrolled at UNIV but did not complete bachelor degree	33	89.2%
Re-enrolled at UNIV and completed bachelor degree	4	10.8%

Degree Completion Patterns

CC Degree/Certificate Completions:	**435**	**8.2%**
Completed an associate degree only	286	65.7%
Completed a certificate only	133	30.6%
Completed both an associate and a certificate	16	3.7%
Completed more than one associate degrees	33	7.6%
Completed more than one certificate	13	3.0%
Completed an associate degree	302	69.4%
Completed degree in 2 years	57	18.9%
Completed degree in 3 years	167	55.3%
Completed degree in 4 years	78	25.8%
UNIV Baccalaureate Degree Completions:	**303**	**5.7%**
Completed degree at ASU	277	91.4%
Completed degree at UA	17	5.6%
Completed degree at NAU	9	3.0%
Completed degree in 1 year	1	0.3%
Completed degree in 2 years	96	31.7%
Completed degree in 3 years	154	50.8%
Completed degree in 4 years	39	12.9%
Completed degree in 5 years	13	4.3%
CC/UNIV Enrollment/Degree Patterns:		
Enrolled at CC only	3,985	75.4%
Enrolled at both CC and UNIV	1,300	24.6%
Enrolled at CC only		
No associate degree	3,830	72.5%
Completed associate degree	155	2.9%
Enrolled at both CC and UNIV		
No associate or bachelor degree	897	17.0%
Completed associate degree but no bachelor degree	100	1.9%
No associate degree but completed bachelor degree	256	4.8%
Completed both associate degree and bachelor degree	47	0.9%